Sergei A. Tretyakov - DTU Orbit (07/08/2016)

Sergei A. Tretyakov

Organisations

Visiting Professor, Department of Photonics Engineering
18/12/2012 → 03/09/2013 Former
setr@fotonik.dtu.dk
VIP

Plasmonics and Metamaterials
19/12/2012 → 02/09/2013 Former
VIP

Publications:

Modeling and understanding of effects of randomness in arrays of resonant meta-atoms

In this review presentation we will discuss approaches to modeling and understanding electromagnetic properties of 2D and 3D lattices of small resonant particles (meta-atoms) in transition from regular (periodic) to random (amorphous) states.

Nanostructured metasurfaces (2D) and metamaterials (3D) are arrangements of optically small but resonant particles (meta-atoms). We will present our results on analytical modeling of metasurfaces with periodical and random arrangements of electrically and magnetically resonant meta-atoms with identical or random sizes, both for the normal and oblique-angle excitations. We show how the electromagnetic response of metasurfaces is related to the statistical parameters of the structure. Furthermore, we will discuss the phenomenon of anti-resonance in extracted effective parameters of metamaterials and clarify its relation to the periodicity (or amorphous nature) of the arrangements of meta-atoms.

General information

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Authors: Tretyakov, S. A. (Intern), Albooyeh, M. (Ekstern), Alitalo, P. (Ekstern), Andryieuski, A. (Intern), Culhaoglu, A. (Ekstern), Lavrinenko, A. (Intern), Morits, D. (Ekstern), Simovski, C. (Ekstern)
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